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EXAMINER

VITAL, PIERRE M

ART UNIT	PAPER NUMBER
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2188

DATE MAILED: 10/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/224,637

Applicant(s)

OFEK ET AL.

Examiner

Pierre M. Vital

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to applicant's communication filed September 2, 2003 in response to PTO Office Action mailed May 27, 2003. The Applicant's remarks and amendments to the claims and/or the specification were considered with the results that follow.

2. Claims 1-28 have been presented for examination in this application. In response to the last Office Action, claims 1, 11, 19-20 and 26 have been amended. No claims have been added or canceled. As a result, claims 1-28 are now pending in this application.

Claim Objections

3. Claim 28 is objected to because of the following informalities:

In claim 28, line 4, it appears that the language "elements directly to the secondary storage element without involving the host computer" should be deleted since it follows a period in the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-4, 7-8, 10, 19-21, 23, 24, 26 and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Tamer et al (US6,035,412).

As per claim 1, Tamer discloses a computer system comprising a host domain including a host computer [*host processors 8 and 10*; Figs. 1 and 2; col. 4, lines 33-43]; a storage domain coupled to the host domain through one or more communication links [*communication link 6*; Fig. 1A; col. 4, lines 16-20], the storage domain comprising: a plurality of primary storage devices for the host domain, at least one of the primary storage devices to provide storage for the host computer [*host accesses the source volumes for read/write operations*; Fig. 1; col. 4, line 65- col. 5, line 12]; a secondary storage device to provide backup storage for the host computer [*slave unit 4, tape silo 12*; Fig. 1]; a network, separate from each of the one or more communication links that couple the storage domain to the host domain [*link 6 couples units 2, 4 to hosts 8, 10 is separate from network 14*; Fig. 1A], that couples the plurality of primary storage devices to the secondary storage device to permit one of the primary storage devices to access the

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secondary storage device through the network without using any of the one or more communication links that couple the storage domain to the host domain [*units 2, 4 and 12 can communicate with one another without using link 6; Fig. 1A*].

As per claim 2, Tamer discloses a primary storage device coupled directly to a secondary storage device [*master storage unit 2 is directly coupled to slave unit 4 by communication link 6; Fig. 1A*].

As per claim 3, Tamer discloses at least one of the primary storage devices is a cached disk array [col. 6, lines 59-65].

As per claim 4, Tamer discloses a secondary storage device including a plurality of ports coupled to the network to send and receive data on the network in parallel [*writes in R1 volumes are automatically copied to R2 volumes; col.5, lines 6-19; col. 6, lines 17-65*].

As per claim 7, Tamer discloses transferring a first logical object from one of the primary storage devices directly to the second storage device directly over a first connection [*master storage unit 2 is directly coupled to slave unit 4 by communication link 6; Fig. 1A*].

As per claim 8, Tamer discloses transferring a second logical object from one of the primary storage devices directly to the second storage device directly over a second connection [*master storage unit 2 is directly coupled to slave unit 4 by communication link 6; Fig. 1A*].

As per claim 10, Tamer discloses the use of a tape library unit [*tape silo 12; Fig. 1*], which is well known in the state of the art.

As per claim 19, Tamer discloses a method for transferring data from at least one of a plurality of primary storage elements to a secondary storage element, the plurality of primary storage elements comprising a primary storage element that serves as primary non-backup storage for a host computer that is separate from and coupled to the primary storage element [*memory 24 coupled to the hosts, does not serve as primary backup storage*; col. 6, lines 19-54], the method comprising the steps of: automatically establishing a first connection through a network between a first primary storage element and the secondary storage element through which a first logical object can be transferred from the first primary storage element to the secondary storage element [*writes in R1 volumes are automatically copied to R2 volumes*; col.5, lines 6-19; col. 6, lines 17-65], the first connection being determined by at least one of the first primary storage element and the secondary storage element [*the transfer of data to the slave system is controlled by the storage systems*; col. 5, lines 16-19]; and transferring the first logical object from the first primary storage element directly to the secondary storage element over the first connection [*units 2, 4 and 12 can communicate with one another without using link 6*; Fig. 1A].

As per claims 20, Tamer discloses automatically establishing a second connection through a network between a first primary storage element and the secondary storage element through which a first logical object can be transferred from the first primary storage element to the secondary storage element [*writes in R1 volumes are automatically copied to R2 volumes*; col.5, lines 6-19; col. 6, lines 17-65]; and transferring

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a second logical object from one of the primary storage devices directly to the second storage device directly over a second connection [*units 2, 4 and 12 can communicate with one another without using link 6; Fig. 1A*].

Claim 21 is rejected as per claim 4 above.

As per claim 23, Tamer discloses the step of automatically establishing comprises a step of establishing a path through a network [Fig. 1; col. 4, lines 49-53; col. 5, lines 39-40].

Claim 24 is rejected as per claim 10 above.

As per claim 26 and 28, Tamer discloses transferring data from the first one of the storage elements to the secondary storage element without involving the host computer [*data is mirrored in a manner that is transparent to the host; col. 7, lines 15-19*].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5, 6, 9, 11-18, 22, 25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamer et al (US6,035,412).

As per claims 5 and 25, the combination Tamer fails to teach a secondary storage device comprising data movers as recited in the claims. Official Notice is taken that both the concept and the advantages of providing for storage devices, which include data movers, are well known and expected in the art.

It would have been obvious to one of ordinary skill in the art to have included the data movers in Tamer as these data movers are known to provide a means for communication between the backup devices and the network.

As per claim 6, Tamer discloses the computer system includes a plurality of host computers [*host processors 8(a)..8(n)*; Fig. 2; col. 6, lines 37-40].

However Tamer does not specifically teach that the plurality of computers is heterogeneous as recited in the claim. Official Notice is taken that both the concept and the advantages of providing a plurality of heterogeneous host computers, are well known and expected in the art.

It would have been obvious to one of ordinary skill in the art to have included the heterogeneous host computers in Tamer as these heterogeneous computers would have allowed the data communications path to conform to different protocols and standards and be independent of the particular hardware and software configuration of any host computer.

As per claim 9, Tamer discloses the claimed invention as detailed above in the previous paragraphs. However, Tamer does not specifically teach means for forming an abstract block set from a logical object stored in one of the primary storage devices as recited in the claim.

It would have been obvious to one of ordinary skill in the art, having the teaching of Tamer before him at the time the invention was made to modify the system of Tamer to include means for forming an abstract block set from a logical object stored in one of the primary storage devices because it would have facilitated communication between the computer and its disk storage device by mapping the file system into corresponding logical addresses on a logical disk.

As per claim 11, Tamer discloses a plurality of host computers [*host processors 8(a)..8(n)*; Fig. 2; col. 6, lines 37-40]; a plurality of primary storage devices to receive and store data in the devices; each primary storage device being associated with at least one of the host computers [*host accesses the source volumes for read/write operations*; Fig. 1; col. 4, line 65- col. 5, line 12]; a secondary storage device to receive and store data in

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the device coupled to a plurality of the primary storage devices [*slave unit 4, tape silo 12; Fig. 1*], the secondary storage device being configured to receive backup data from each of the host computers [*slave unit 4, tape silo 12; Fig. 1*]; a single backup controller capable of backing up data stored from both the first and second host computers on the plurality of primary storage devices to the secondary storage device [*backup console 16 controls and coordinate backup; col. 4, lines 49-53*].

However, Tamer fails to specifically teach that the plurality of host computers are heterogeneous and that they comprise a first host computer comprising a first platform and a second host computer comprising a second platform different from the first platform as recited in the claim. Official Notice is taken that both the concept and the advantages of providing a plurality of host computers that are heterogeneous and comprise a first host computer comprising a first platform and a second host computer comprising a second platform different from the first platform, are well known and expected in the art.

It would have been obvious to one of ordinary skill in the art, having the teachings of Tamer before him at the time the invention was made, to modify the system of Tamer to include a heterogeneous plurality of host computers comprising a first host computer comprising a first platform and a second host computer comprising a second platform different from the first platform because it would have provided a storage controller capable of providing multiple host computers system with access to multiple storage arrays by allowing the data communications path to conform to different

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protocols and standards and be independent of the particular hardware and software configuration of any host computer.

Claim 12 is rejected as per claim 3 above.

Claim 13 is rejected as per claim 9 above.

Claim 14 is rejected as per claim 4 above.

Claim 15 is rejected as per claim 5 above.

Claim 16 is rejected as per claim 7 above.

Claim 17 is rejected as per claim 8 above.

Claim 18 is rejected as per claim 10 above.

Claim 22 is rejected as per claim 6 above.

As per claim 27, Tamer discloses the secondary storage device is configured to receive the back up data from at least one of the primary storage devices without involving one or more of the host computers [*data is mirrored in a manner that is transparent to the host*; col. 7, lines 15-19].

Response to Arguments

Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant is required under 37 C.F.R. § 1.111 (c) to consider these references fully when responding to this action. The documents cited therein teach switched network, and storage backup.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre M. Vital whose telephone number is (703) 306-

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5839. The examiner can normally be reached on Mon-Fri, 8:30 am - 6:00 pm, alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (703) 306-2903. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9000.

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Pierre M. Vital
Art Unit 2188
October 17, 2003

Reginald G. Bragdon
REGINALD G. BRAGDON
PRIMARY EXAMINER